



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/816,889	04/05/2004	Eiichi Kamiyama	119338	4027
25944	7590	08/22/2005	EXAMINER	
OLIFF & BERRIDGE, PLC P.O. BOX 19928 ALEXANDRIA, VA 22320			ALI, HYDER	
		ART UNIT		PAPER NUMBER
		3747		

DATE MAILED: 08/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

98

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/816,889	KAMIYAMA, EIICHI	
	<b>Examiner</b>	<b>Art Unit</b>	
	HYDER ALI	3747	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 12 July 2005.
- 2a) This action is FINAL.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1,2 and 6-9 is/are rejected.
- 7) Claim(s) 3-5 is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 05 April 2004 is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All    b) Some \* c) None of:
1. Certified copies of the priority documents have been received.
  2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |                                                                                                                         |                                                                             |
|-------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                                                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                    | Paper No(s)/Mail Date. _____.                                               |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____. | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
|                                                                                                                         | 6) <input type="checkbox"/> Other: _____.                                   |

## DETAILED ACTION

### *Specification*

The abstract of the disclosure is objected to because it exceeds 150 word maximum. Correction is required. See MPEP § 608.01(b).

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**1. Claims 1,6,7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyai (JP 7-26981) in view of Document (DE 24 04 231).**

Miyai discloses a compression ratio control method adopted in an internal combustion engine comprising the steps of providing a driving source 35 that generates a rotational driving force to vary a compression ratio, a transmission module 37 that transmits the rotational driving force, and a compression ratio varying mechanism 23,24 that receives the rotational driving force transmitted by said transmission module 37; actuating said compression ratio varying mechanism 23,24 to drive at least one of a piston head 13 and a crank casing 4 along the axis line of the cylinder, so as to vary a volume of a combustion chamber, in order to vary the compression ratio;

Miyai does not disclose producing and/or applying a pressing force to piston head and crank casing to reduce a transmission torque of the rotational driving force of said driving source by said transmission module, according to the driving state of them,

when compression ratio varying mechanism is varying the compression ratio. However, **Document (DE 24 04 231)** discloses pull springs changes the compression ratio and the damper off set any fluctuations caused by changing compression ratio by pull springs. It would have been obvious to one of ordinary skill in the engine art to utilize a damper in the engine disclosed by **Miyai** in order to off set any fluctuations as taught by **Document (DE 24 04 231)**

As to Claim 6, **Miyai** discloses compression ratio varying mechanism 23,24 drives at least one of the piston head 13 and crank casing 4, so that the relative position of them changes along the axis line of the cylinder of the combustion chamber.

As to Claim 7, **Document (DE 24 04 231)** discloses the pressing force is applied along the moving direction of the piston head 1 and crank casing 3.

**2. Claims 2,8,9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyai (JP 7-26981) in view of Document (DE 24 04 231).**

**Miyai** discloses an internal combustion engine that varies a compression ratio, said internal combustion engine comprising: a driving source 35 that generates a rotational driving force to vary a compression ratio; a transmission module 37 that transmits the rotational driving force; a compression ratio varying mechanism 23,24 that receives the rotational driving force transmitted by said transmission module 37, drives at least one of a piston head 13 and a crank casing 4 with the received rotational driving force, so as to change a positional relation between said piston head 13 and said crank casing 4 and vary a volume of a combustion chamber, thereby varying the compression ratio.

**Miyai** does not disclose producing and/or applying a pressing force to piston head and crank casing to reduce a transmission torque of the rotational driving force of said driving source by said transmission module, according to the driving state of them, when compression ratio varying mechanism is varying the compression ratio. However, **Document (DE 24 04 231)** discloses pull springs changes the compression ratio and the damper off set any fluctuations caused by changing compression ratio by pull springs. It would have been obvious to a person having ordinary skill in the art to modify Miyai by employ a damper to off set any fluctuations as taught by Document (DE 24 04 231) **in order to** reduce a transmission torque of the rotational driving force of said driving source 35 by said transmission module 37, according to the driving state of them, when compression ratio varying mechanism 23,24 is varying the compression ratio.

As to Claim 8, **Miyai** discloses compression ratio varying mechanism 23,24 drives at least one of the piston head 13 and crank casing 4, so that the relative position of them changes along the axis line of the cylinder of the combustion chamber.

As to Claim 9, **Document (DE 24 04 231)** discloses the pressing force is applied along the moving direction of the piston head 1 and crank casing 3.

#### ***Allowable Subject Matter***

Claims 3-5 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Response to Arguments***

Applicant's arguments filed 7/12/05 have been fully considered but they are not persuasive. On page 5, last sentence applicant's remark "the piston head or crank casing does not move along the axis line of the cylinder" are not persuasive because Miyai discloses when the camshafts 23 and 24 are rotated, the cylinder block 13 is moved along the axis line of the cylinder. Further on page 5, line 2, applicant's remark that "**claim 5 is canceled**" but the listing of claims does not show that **claim 5 is cancelled**.

***Conclusion***

Applicant's amendment necessitated the rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HYDER ALI whose telephone number is (571) 272-4836. The examiner can normally be reached on M-F (8:30-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, HENRY YUEN can be reached on (571) 272-4856. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Hyder Ali

ha

  
Henry C. Yuen  
Supervisory Patent Examiner  
Group 3700